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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,087	02/22/2002	Futoshi Tanigawa	10059-406US (P27064-01)	2369

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ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER	
YUAN, DAH WEI D	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/081,087	TANIGAWA ET AL.	
	Examiner	Art Unit	
	Dah-Wei D. Yuan	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

POSITIVE ELECTRODE ACTIVE MATERIAL, FOR ALKALINE STORAGE BATTERY, POSITIVE ELECTRODE USING THE SAME AND METHOD OF PRODUCING THE SAME

Examiner: Yuan S.N. 10/081,087 Art Unit: 1745 January 10, 2006

Detailed Action

1. The Applicant's Request for Reconsideration filed on November 17, 2005 was received.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on August 18, 2005.

Claim Rejections

6. The claim rejections under 35 U.S.C.102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hayashi et al. (US 6,358,648 B2) claims 1-4,6-8 are maintained.

With respect to claims 1,3,4,6,7, Hayashi et al. teach a nickel electrode active material for alkaline storage batteries comprising nickel hydroxide. Nickel hydroxide is produced by mixing and stirring an aqueous nickel sulfate solution and an aqueous sodium hydroxide solution thereby depositing nickel hydroxide. The powders are then subjected to alkali treatment with one of aqueous sodium hydroxide solutions having different pH values (alkali treatment) to remove anions such as sulfate. Spherical powders, i.e., mean particle circularity is equivalent to 1, of solid solute nickel hydroxide incorporating therein one or two elements selected from the group consisting of cobalt, cadmium, zinc and magnesium are produced. The mean particle size of the resulting power is reported to be about 10 μm. Hayashi et al. further teach that the

resulting nickel hydroxide particles have better crystal growth and more homogeneous crystal along certain crystal plane than conventional nickel hydroxide. As a result, the decreases in the number of disordered crystals suggest uniform progress of charge reaction of nickel hydroxide to nickel oxyhydroxide. Thus, the positive electrode active material would invariably comprise nickel oxyhydroxide upon charging the battery. See Abstract, Column 3, Lines 51-67; Column 4, Lines 39-51; Column 6, Lines 39-46. Moreover, it is the position of the examiner that other properties of said material, such as BET surface area, particle size distribution and full width at half maximum of a particular crystallographic orientation, are inherent, given that the positive electrode active material disclosed by Hayashi et al. and the present application having same chemistry and manufacturing procedures. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

Alternatively, Hayashi et al. teach the nickel hydroxide is produced by mixing and stirring an aqueous nickel sulfate solution and an aqueous sodium hydroxide solution. See Example 1. It is well known in the art that mixing and stirring enhance the uniformity of the multiple solutions in the mixture. Thus, Hayashi et al. would identify mixing (stirring) of the solution as a processing variable in the fabrication of positive electrode active material. Therefore, it would have been within the skill of the ordinary artisan to adjust the degree of mixing of the solution to yield nickel hydroxide or nickel oxyhydroxide powders of desired circularity and distribution of circularity. *Discovery of optimum value of result effective variable*

in known process is ordinarily within skill of art. In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claim 2, Hayashi et al. teach the solid solution nickel hydroxide powders are produced by dissolving a sulfate of one or two elements, including cobalt, cadmium, zinc and magnesium, in the nickel sulfate solution. Therefore, the resulting positive electrode active material would have a cobalt compound on a portion of the surface. See Column 6, Lines 37-46.

With respect to claim 8, Hayashi et al. teach the positive electrode active material is first mixed with a cobalt powder, a cobalt hydroxide powder and a zinc oxide powder. Water is then added to the mixture and kneaded to make a paste, which is filled onto a foamed porous nickel substrate. See Column 5, Lines 11-20.

4. Claims 1-4,6-8 are rejected under 35 U.S.C.102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kato et al. (US 6,083,642).

With respect to claims, 1-4,6,7, Kato et al. disclose a positive electrode material for an alkaline storage battery. The active material comprises nickel hydroxide particles and a higher cobalt oxide (γ-cobalt oxyhydroxide). The positive electrode material is prepared by coating the surface of nickel hydroxide particles with the higher cobalt oxide. The nickel hydroxide particles are a solid solution material with one or more metallic element other than nickel, including cobalt, cadmium, and zinc. The solid solution nickel hydroxide particles with the cobalt oxide coating have an average particle diameter of 5 to 20 μm and a BET specific surface area of 5 to 12 m^2/g. In one embodiment, an aqueous solution containing nickel sulfate as the

main component and cobalt sulfate and zinc sulfate are mixed. An aqueous sodium hydroxide solution is slowly added dropwise while adjusting the pH of the solution with aqueous ammonia, thereby to deposit spherical solid solution nickel hydroxide particles, i.e., the circularity of the particles is 1. The solid solution nickel hydroxide particles with Co and Zn incorporated therein thus prepared are washed with water and then dried to obtained positive electrode particles. Also, Kato et al. reveal the presence of nickel oxyhydroxide in the positive electrode active material based on the X-ray diffraction and the spectral calorimeter studies. See Abstract, Column 4, Lines 22-42; 66 to Column 5, Line 5; Column 11, Lines 50-65; Column 6, Lines 39-46; Column 13, Lines 26-45; Column 29, Lines 1-12. Moreover, it is the position of the examiner that other properties of said material, such as particle size distribution and full width at half maximum of a particular crystallographic orientation, are inherent, given that the positive electrode active material disclosed by Kato et al. and the present application having same chemistry and manufacturing procedures. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

Alternatively, Kato references have identified pH and temperature of the solution as critical processing variables in the fabrication of positive electrode active material. See Column 2, Lines 15-45. Therefore, it would have been within the skill of the ordinary artisan to adjust the pH of the solution to yield nickel hydroxide or nickel oxyhydroxide powders of desired circularity and distribution of circularity. Also, it is well known in the art that mixing

and stirring enhance the uniformity of the multiple solutions in the mixture. Thus, Kato et al. would identify mixing (stirring) of the solution as a processing variable in the fabrication of positive electrode active material. Therefore, it would have been within the skill of the ordinary artisan to adjust the degree of mixing of the solution to yield nickel hydroxide or nickel oxyhydroxide powders of desired circularity and distribution of circularity. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claim 8, Kato et al. teach the positive electrode active material is first mixed with a cobalt powder, a cobalt hydroxide powder and a zinc oxide powder. Water is then added to the mixture and kneaded to make a paste, which is filled onto a foamed porous nickel substrate. See Column 11, Line 66 to Column 12, Line 10.

Response to Arguments

5. Applicant's arguments filed on November 17, 2005 have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) Kato teaches the pH and temperature of the solution are important in the synthesis of cobalt hydroxide instead of the production of nickel hydroxide;

(b) Because of the variability of processing parameters, it is nearly impossible to specify the differences between the conventional production conditions and the production conditions of the present invention;

(c) One of ordinary skill in the art would not modify the degree of stirring in the solution.

In response to Applicant's arguments, please consider the following comments.

(a) Kato reference repeatedly identifies pH and temperature of the solution as critical processing variables in the production of nickel hydroxide particles. Kato first discusses the $Co(OH)_2$-coated nickel hydroxide particles are prepared by using a method of stirring nickel hydroxide particles in an aqueous solution of a divalent cobalt salt and adjusting the pH while adding dropwise an aqueous alkaline solution. See Column 3, Lines 25-50. Later Kato discloses the adding dropwise an aqueous alkaline solution while mixing nickel hydroxide particles having a coating layer of cobalt hydroxide in a container equipped with microwave heating means and mixing/stirring means. See Column 4, Lines 38-61. Kato further discusses an aqueous sodium hydroxide solution is slowly added dropwise while adjusting the pH of the solution with an aqueous ammonia, thereby to deposit spherical solid solution nickel hydroxide particle. See Example 1;

(b) Applicants appear to admit that many factors, including but not limited to pH of the solution, solution temperature, mechanical agitation, size of the container and shape of the stirring blades, would have significant impact on the resulting characteristics of the nickel hydroxide powders. The statements by the Applicants also suggest the nature of interaction of the parameters involved, in which no predominant variables can be identified and none of the processing variable can be independently modified. This further raises the questions on the assertions of the Applicants that temperature and pH value of the solution are the critical

parameters to the production of the powders. Referring to the instant disclosure, an aqueous solution of nickel sulfate and ammonium sulfate are added into a solution of sodium hydroxide at 35°C having a pH of 12 in a reaction vessel under stirring. See pages 23-24. In comparison, Kato reference teaches nickel hydroxide particles are charged in an aqueous cobalt sulfate solution and an aqueous sodium hydroxide solution is slowly added dropwise, followed by continuous stirring while adjusting so that the pH of the aqueous solution at 35°C is maintained at 12. See Example 2. Clearly, both disclosures teach the use of same temperature and pH of the solutions in the preparation of the powders. If temperature and pH are the critical parameters as admitted by the Applicant, then the resulting properties of said material, such as circularity, particle size, particle size distribution and full width at half maximum of a particular crystallographic orientation, are inherent, given that the positive electrode active material disclosed by Kato et al. and the present application having same chemistry and manufacturing procedures.

(c) The instant disclosure merely teaches the stirring rate is increased for the aqueous solution of sodium hydroxide in the reaction vessel. See Example 2. There is no specific revelation nor discussion on the rpm, the size of the container, the shape of the stirring blade and duration of the stirring. Thus one of ordinary skill in the art would not be able to make and/or use the invention as originally filed. Nevertheless, it is realized that an increase in stirring rate of the solution yields powder of slightly different circularity and a small increase in $C_{0.4A}$ value (<2.2% between batteries of example 1 and 2) based on the limited discussion. As described above, it is well known in the art that mixing and stirring enhance the uniformity of the multiple

solutions in the mixture. Thus, Hayashi and Sato would identify mixing (stirring) of the solution as a processing variable in the fabrication of positive electrode active material. Therefore, it would have been within the skill of the ordinary artisan to adjust the degree of mixing of the solution to yield nickel hydroxide or nickel oxyhydroxide powders of desired circularity and distribution of circularity.

Conclusion

6. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
January 12, 2006

DAH-WEI YUAN
PRIMARY EXAMINER